(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 11 December 2003 (11.12.2003)

PCT

(10) International Publication Number WO 2003/102494 A3

(51) International Patent Classification⁷:

F02C 7/00

(21) International Application Number:

PCT/US2003/017040

(22) International Filing Date:

3 June 2003 (03.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/388,604

3 June 2002 (03.06.2002) US

- (71) Applicant (for all designated States except US): VIBRO-METER INC. [US/US]; 10 Ammon Drive, Manchester, NH 03103 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): PLIMPTON, Jonathan [US/US]; 36 Ayers Road, Canterbury, NH 03224 (US). JUBINVILLE, Leo [US/US]; 410 Page Hill Road, Goffstown, NH 03045 (US). DUCKLESS, Edward [US/US]; 77 Tsienneto Road, Derry, NH 03038 (US).
- (74) Agent: WASHVILLE, Jeffrey, D.; Lorusso Loud & Kelly LLP, 440 Commercial Street, Boston, MA 02109 (US).

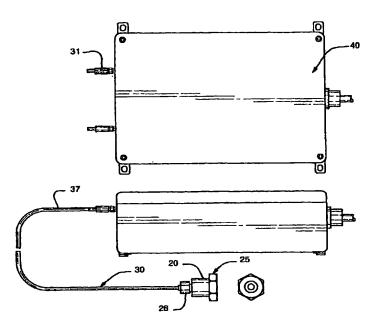
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, F1, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG,

[Continued on next page]

(54) Title: FLAME DETECTION METHOD AND APPARATUS FOR GAS TURBINE EXHAUST PATH



(57) Abstract: A method and apparatus for monitoring gas turbine exhaust for unwanted flames employs a system comprising an electro-optics module (40), sensors (44), processing electronics (45), and collection and transmitting optics (20, 30). Information generated by the sensor can suggest problems with combustion related components.

WO 2003/102494 A3



UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 4 March 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/17040

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : F02C 7/00 US CL			
US CL: 60/772,808 According to International Patent Classification (IPC) or to both national classification and IPC			
B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols) U.S.: 60/39.091, 39.281, 772, 803			
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.
Y	US 5,148,667, A (MOREY) 22 September 1992 (22	.09.1992), see Figures 1 and 2.	1-23
Y	US 5,257,496 A (BROWN et al) 02 NOvember 1993 (02.11.1993), see Figures 1 and 3-5.		1-23
x	US 5,828,797 A (MINOTT et al) 27 October 1998 (27.10.1998), see Figures 1-5, and 8.		1-2, 5-6
 Y			3, 4, 7-23
Y	US 6,071,114 A (CUSACK et al) 06 June 2000 (06.06.2000), see Figures 1, 2,, and 12-14.		1-23
Further documents are listed in the continuation of Box C. See patent family annex.			
Special categories of cited documents:		"T" later document published after the inte	
"A" document defining the general state of the art which is not considered to be of particular relevance		date and not in conflict with the applic principle or theory underlying the inve	ention
"E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)		"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
		"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination	
"O" document referring to an oral disclosure, use, exhibition or other means		being obvious to a person skilled in th	
"P" document published prior to the international filing date but later than the priority date claimed		"&" document member of the same patent family	
Date of the actual completion of the international search		Date of mailing of the international search report 23 DEC 2003 Authorized officer Sharm 7). There fr	
17 December 2003 (17.12.2003) Name and mailing address of the ISA/US		Authorized officer Shann T)	neve ter
Mail Stop I C1, Mill. Jord C5		LOUIS J. CASAREGOLA	
Commissioner for Patents P.O. Box 1450			
Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230		Telephone No. 703-308-3014	